

What is claimed is:

1. A calibration device capable of producing light for calibrating a low light level imaging system, the device comprising:

an array of low intensity light supplies for emitting light in the range of about 10^3 to about 10^8 photons/second/centimeter squared/steradian, wherein each low intensity light supply comprises a light interface for receiving light from a light source and for emitting at least a portion of the light from the device;

a housing that contains the array of low intensity light supplies; and

a voltage source, in electrical communication with the light source for each low intensity light supply, and designed or configured to provide power to the light source.

2. The device of claim 1 wherein the light source is a light emitting diode.

3. The device of claim 1 wherein the light from each light source is substantially constant over the operating life of the calibration device.

4. The device of claim 3 wherein the light source is a self-monitoring low intensity diode.

5. The device of claim 3 further comprising a voltage regulator in electrical communication with the voltage source.

6. The device of claim 1 wherein the light interface comprises an opaque diaphragm with a light transmission hole disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device.

7. The device of claim 4 wherein the hole has a diameter in the range of about 30 to about 100 microns.

8. The device of claim 7 wherein each low intensity light supply is designed or configured to emit light from the interface in the range of about 10^5 to about 10^7 photons/second/centimeter squared/stiradian.
9. The device of claim 1 further comprising a voltage shutoff in electrical communication with the voltage source.
10. The device of claim 1 further comprising a status indicator in electrical communication with the voltage source that temporarily flashes to indicate operation of the device.
11. The device of claim 1 wherein the array of low intensity light supplies comprises from 2 and 8 light supplies in the array.
12. The device of claim 1 wherein the height of the device is designed relative to the average height of a surface of a specimen to be imaged.
13. The device of claim 12 wherein the light source for a low intensity light supply in the array is configured to emit light horizontally towards the light interface.
14. The device of claim 13 further including an opaque surface disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device, the opaque surface for deflecting a portion of the horizontal light vertically.
15. The device of claim 1 wherein the light interface comprises a light diffuser disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device, the light diffuser creating a Lambertian distribution for a low intensity light supply in the array.
16. The device of claim 1 wherein the light source for a low intensity light supply in the array produces one of red and green light.
17. The device of claim 1 further comprising a neutral density filter disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device, the neutral density filter being attenuating light transmitted through the filter.

18. The device of claim 1 wherein the device is substantially light tight.

19. The device of claim 1 wherein each of the low intensity light supplies is calibrated to absolute units.

20. A system for capturing an image of a low intensity light source with a camera, the system comprising:

an imaging box having a set of walls enclosing an interior cavity and a camera mount configured to position the camera relative the interior cavity;

a calibration device comprising a voltage source and an array of low intensity light supplies for emitting light in the range of about 10^3 to about 10^8 photons/second/centimeter squared/stiradian, wherein each low intensity light supply comprises a light interface for receiving light from a light source and for emitting at least a portion of the light from the device, the voltage source being in electrical communication with the light source for each low intensity light supply; and

a processor designed or configured to receive image data corresponding to light emitted from the calibration device and compare the image data to known light emission data for the calibration device.

21. The system of claim 20 wherein the imaging box is substantially light tight.

22. The system of claim 20 wherein the light interface comprises a light diffuser disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device, the light diffuser designed or configured to diminish directionality of the light produced by the light source for a low intensity light supply in the array.

23. The system of claim 20 further comprising a neutral density filter disposed along a light path between the light source for a low intensity light supply and emission of light from the light source from the device, the neutral density filter being designed or configured to attenuate light transmitted through the filter.

24. A method for calibrating a system capable of capturing an image of a low intensity light source, the system comprising an imaging box and a camera for capturing the image, the method comprising:

placing a light calibration device in the imaging box, the light calibration device including an array of low intensity light supplies;

emitting light from one or more of the low intensity light supplies in the range of about 10^3 to about 10^8 photons/second/centimeter squared/stiradian;

receiving the light from the one or more of the low intensity light supplies using the camera; and

comparing the received light with a known light emission for the one or more of the low intensity light supplies.

25. The method of claim 24 further comprising constructing a photographic image using the light received.

26. The method of claim 25 further comprising constructing a luminescent image using the light received.

27. The method of claim 26 further comprising comparing the spatial resolution between the luminescent image and the photographic image.

28. The method of claim 24 wherein receiving the light from the one or more of the low intensity light supplies occurs for an extended period of time long enough to assess the light integrity of the imaging box.

29. The method of claim 28 wherein receiving the light emissions for each of the one or more of the low intensity light supplies occurs in the range of about 1 second to about 5 minutes.

30. The method of claim 24 wherein comparing the received light with the known light emission comprises provides a spectral assessment for the imaging system.